



Current Drug Testing Technologies

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Standard Drugs of Abuse Panel

- Amphetamines (uppers, speed, meth, pep pills)
 - Methamphetamine
 - Amphetamine
- Cocaine (crack, coke, snow, rock, blow)
- Cannabinoids (marijuana)
 - Dope, weed, grass, pot, reefer, mary jane
- Opiates
 - Codeine
 - Morphine
 - Heroin (H, junk, smack, china white)
- Phencyclidine
 - PCP, Angel dust



Other Drugs of Concern

- Barbiturates (phenobarbital, butalbital)
- Benzodiazepines (Valium, Xanax)
- Ecstasy (MDMA, MDA)
- Oxycodone (Percocet)
- Hydrocodone (Vicodin)
- Steroids



How is drug testing done?

- Urinalysis is the most common drug testing method, and the only method currently allowed in federal drug testing programs.
- Other matrixes which can be used for testing:
 - Hair
 - Oral fluids
 - Sweat patch
 - Blood



Urine Drug Testing

■ Advantages

- Highest assurance of reliable results (uniform testing, performance testing, federally approved)
- Least expensive
- Able to test of more drugs than standard 5 panel

■ Disadvantages

- No dose concentration relationship (can only determine presence or absence)
- Specimen can be adulterated, diluted or substituted
- Collection procedure may be considered invasive and embarrassing
- Detection time 2-3 days



Hair Drug Testing

■ Advantages

- Provides a longer estimate of time of drug use
- More difficult to adulterate
- Specimen is more stable

■ Disadvantages

- Inability to detect recent use
- Possibility of hair color bias
- Collection procedures may be considered invasive
- Concerns regarding no head hair - where to collect
- More costly



Oral Fluids Drug Testing

■ Advantages

- Sample is obtained at any location under direct observation
- Adulteration potential is minimal
- Reflect very recent drug use
- Less invasive to collect than urine, hair or blood

■ Disadvantages

- Shorter window of detection
- Concerns regarding marijuana use, differentiating passive inhalation from use
- Limited drug panel



Sweat Patch Drug Testing

■ Advantages

- Non-invasive
- Longer window of detection than urine
- Tamper-evident

■ Disadvantages

- Limited number of labs offering this test (1)
- Passive exposure may contaminate patch and affect results
- People with skin eruptions, or excessive hair can not wear the patch



Blood Drug Testing

■ Advantages

- Able to detect a wide variety of drugs
- Test results may be interpreted in relationship to behavior of the donor

■ Disadvantages

- Collection is invasive, health concerns
- Expensive (analytical methods are difficult and time consuming)
- Longer turnaround time



Detection Times

- Urine: 2-3 days (except THC - which can be detected in urine for up to 30 days after use)
- Hair: 7 days to 3 months
- Oral fluids: 10-24 hours
- Sweat Patch: 7 days +
- Blood: 10-24 hours



The Testing Process

- Specimen Collection
- Screening
- Confirmation
- Review



The Testing Process

- Specimen Collection
 - Identification
 - Explanation of testing process
 - Specimen security (tamper-evident bottle seals, initials)
 - Chain of Custody



The Testing Process

- Specimen Collection / Chain of Custody
 - Documentation of specimen collection, transport, testing and storage
 - Specimen identification started at the point of collection and continued through entire process
 - Eliminates the possibility of specimen mix up



The Testing Process

- Screening

- Specimen seals verified intact; chain of custody complete
- A portion of the specimen is removed for analysis
- Specimen is checked for the presence of any unusual characteristics or adulterants
- Initial testing done by immunoassay, ELISA, or similar technique



The Testing Process

■ Confirmation

- Any specimen which tests non-negative is forwarded for confirmation testing by gas chromatography/mass spectrometry (GC/MS) or GC/MS/MS.
- To be a positive test result, specimen must both screen positive and confirm positive.
- Data review by certifying scientist



Medical Review Officer (MRO)

■ Review

- A positive result must be reviewed to determine if it is due to use of illegal substances or by other, legal substances.
- The review may be done by a trained professional or by a Medical Review Officer (MRO).
- An MRO is a licensed physician who has received additional training in drugs of abuse testing and is certified in drug test results interpretation.



Trying to Beat the Test

"I heard it is easy to beat the test....."

- Internet sites
 - A recent Google search for "beat drug test" came up with 706,000 hits (0.33 sec)
 - Advise on how to beat the test and products for sell
- Adulteration
 - urine luck, stealth, klear, hair shampoos, mouthwash for oral fluids
- Dilution (urine)
 - golden seal tea, fizzies, green clean
- Substitution (urine)



General Testing Costs

For the standard five drug panel:

- Urine: \$ 15 - 30 per test
- Hair: \$ 30 - 50 per test
- Oral Fluids: \$ 25 - 30 per test
- Blood: \$ 100+
- Sweat: \$ 30 - 50 per test



Drug Testing in Schools

- “[W]e find that testing students who participate in extracurricular activities is a reasonable effective means of addressing the School District’s legitimate concerns in preventing, deterring, and detecting drug use.

Justice Clarence Thomas
U.S. Supreme Court
June 27, 2002